[preprint,showpacs,preprintnumbers,amsmath,amssymb]revtex4
graphicxdcolumnbm
∂
document

Resolving signals in the LISA data

Andrzej Królak krolak@jpl.nasa.gov [Also at:]Institute of Mathematics, Polish Academy of Sciences, Warsaw, Poland Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109

Massimo Tinto Massimo.Tinto@jpl.nasa.gov [Also at:]Space Radiation Laboratory, California Institute of Technology, Pasadena, CA 91125 Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109

abstract We estimate the upper frequency cutoff of the galactic white dwarf binaries gravitational wave background that will be observable by the LISA detector. This is done by including the modulation of the gravitational wave signal due the motion of the detector around the Sun. We find this frequency cutoff to be equal to $10^{-3.0}$Hz, a factor of 2 smaller than the values previously derived. This implies an increase in the number of resolvable signals in the LISA band by a factor of about 4.

Our theoretical derivation is complemented by a numerical simulation, which shows that by using the maximum likelihood estimation technique it is possible to accurately estimate the parameters of the resolvable signals and then remove them from the LISA data.